

**CLAIMS**

1. A driving controlling method of a linear compressor, wherein a firing angle is respectively applied at the time of a compression processing and a suction  
5 processing according to a load state.

2. The method of claim 1, wherein the compression processing and the suction processing are determined on the basis of a maximum value of a current and a phase angle variance.

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3. The method of claim 2, wherein a stroke is varied at the time of the compression processing and a full stroke control having a maximum distance between an upper dead point and a lower dead point of a piston is performed at the time of the suction processing in case of a high temperature load.

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4. The method of claim 1, wherein a firing angle is decrease thus to increase a stroke at the time of the compression processing in case of a high temperature load.

20 5. The method of claim 1, further comprising the steps of:  
detecting a load of the linear compressor;  
determining whether the load is more than a standard load;  
performing a variable capacity control for varying a stroke when the load is more than a standard load; and

performing a full stroke control having a maximum distance between an upper dead point and a lower dead point of a piston when the load is less than a standard load.

- 5 6. The method of claim 5, wherein the suction processing and the compression processing are determined on the basis of a maximum value of a current and a phase angle variance, and a firing angle is decreased thus to increase a stroke at the time of the compression processing in the step of controlling the variable capacity.

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7. A driving controlling method of a linear compressor comprising the steps of:

detecting a voltage and a current generated at a linear compressor;

receiving the detected voltage and current and thus detecting a voltage/ current

- 15 phase difference of a corresponding time point;

comparing a voltage/ current phase difference of a present load state with a voltage/ current phase difference of a standard load state; and

controlling a stroke by a variable capacity for varying a stroke when the voltage/ current phase difference of a present load state is more than the voltage/ current

- 20 phase difference of a standard load state, and decreasing a stroke when the voltage/ current phase difference of a present load state is less than the voltage/ current phase difference of a standard load state.

8. The method of claim 7, wherein the step of controlling a stroke by a

variable capacity comprises the steps of:-

determining a compression processing or a suction processing by detecting a maximum value of a current and a phase difference variance; and

decreasing a firing angle thus to increase a stroke at the time of the compression

5 processing and maintaining a firing angle thus to maintain a full stroke having a maximum distance between an upper dead point and a lower dead point of a piston at the time of the suction processing as a result of the determination.

9. A driving controlling apparatus of a linear compressor comprising:

10 an electric circuit unit for driving a linear compressor by varying a stroke by a piston movement;

a voltage/ current detecting unit for detecting a voltage and a current generated at the electric circuit unit;

a phase difference detecting unit for receiving a voltage and a current from the  
15 voltage/ current detecting unit and thus detecting a voltage/ current phase difference of a corresponding time point; and

a stroke controlling unit for receiving a phase difference from the phase difference detecting unit and applying a stroke voltage to the electric circuit unit by differently applying a firing angle at the time of a compression processing and

20 a suction processing, respectively on the basis of the inputted phase difference.

10. The apparatus of claim 9, wherein the stroke controlling unit applies a stroke voltage for increasing a stroke to the electric circuit unit at the time of the compression processing, and applies a stroke voltage for controlling by a full

stroke having a maximum distance between an upper dead point and a lower dead point of a piston to the electric circuit unit at the time of the suction processing.

5 11. The apparatus of claim 9, wherein the stroke controlling unit comprises:  
a microcomputer for comparing a voltage/ current phase difference detected  
from the phase difference detecting unit with a voltage/ current phase difference  
at the time of a standard load, thereby differently applying a firing angle at the  
time of the compression processing and the suction processing, respectively,  
10 and thus outputting a switching control signal according to the stroke voltage;  
and  
a memory for previously storing a stroke voltage value corresponding to a  
voltage/ current phase difference.

15 12. The apparatus of claim 11, wherein the stroke controlling unit controls a  
stroke by a variable capacity for varying a stroke when a voltage/ current phase  
difference of a present load state is more than the voltage/ current phase  
difference at the time of a stand load, and decreases a stroke when a voltage/  
current phase difference of a present load state is less than the voltage/ current  
20 phase difference at the time of a stand load.

13. The apparatus of claim 9, wherein the electric circuit unit switches an  
alternating current to a train thus to drive the linear compressor.